The Mythology of Progress, Anti-Progress and a Mythology for the 21st Century

By Charles Hugh Smith

"Neither revolution nor reformation can ultimately change a society, rather you must tell a new powerful tale, one so persuasive that it sweeps away the old myths and becomes the preferred story, one so inclusive that it gathers all the bits of our past and our present into a coherent whole, one that even shines some light into the future so that we can take the next step. If you want to change a society, then you have to tell an alternative story." Ivan Illich

Introduction

I approach Progress as an observer, and that's problematic.

Why? It's human nature to consider ourselves objective, but we harbor beliefs about the world that generate strong emotions when they're challenged.

These emotions make it difficult to be objective. It's human nature to prefer simplicity to complexity, confidence to uncertainty, clarity to ambiguity, optimism to pessimism, and hope to doubt, and so modifying our beliefs is difficult. We take any critique of our beliefs personally, as if the challenge is directed at us rather than to a specific claim about how the world works.

Approaching Progress as an observer is problematic for three reasons: one, the observer must be alert to their own emotions and seek to filter them out, and two, those whose beliefs are being challenged may lash out, creating a powerful temptation to respond in kind.

The cliché is that politics and religion are topics to avoid for these reasons. (Perhaps we should add money to the list.) The third reason Progress is problematic is that it's a uniquely emotionally laden subject, for it is the bedrock of modernity: *Progress is humanity's destiny*.

Progress lights up profound emotions because it gives us confidence that the future will be better than the present, hope that difficulties will be overcome and an optimistic trajectory of human history.

Given the power of these beliefs, it's no wonder that questioning Progress ignites a firestorm.

The ferocity of the firestorm is illustrated by the reaction of the highly educated audience at Stanford University when author Jerry Mander questioned technology as the innately-positive driver of Progress, a fury described by his widow Koohan Paik-Mander in Mander's 2023 obituary:

"Mander's scorn for technology was a lone voice during the heady genesis of the Bay Area tech industry. He maintained that the deceptive term 'communications technology' was not at all about accommodating communications, but rather, about centralizing control. He was viewed at the time as nothing less than heretical.

Jerry's pariah status was summed up perfectly at a lecture he gave in 1995, hosted by Stanford University. After having warned the packed auditorium that a culture based on computers would kill

both the Earth and democracy, the audience became outraged. To utter such words was tantamount to telling them there was no God.

After Jerry's lecture, the room of computer-science nerds quickly jostled into a queue to roundly insult him for close to an hour. One after the other, they seemed to burst at the seams in rage, fists in the air, spraying epithets at him like buckshot: You're a dinosaur!' 'You'll be left in the dust!' 'Go back under your rock, old man!' while Jerry, bemused, bespectacled and definitely blindsided by the onslaught, sat on stage with his arms clutched protectively around himself like a straitjacket."

This is an extraordinary example of the intensity of emotions aroused by skepticism of Progress and its primary engine, technology. The well-educated audience, steeped in the principles of scientific objectivity, immediately jettisoned their rationality in favor of much baser emotions, of the sort that had once led to burning heretics at the stake.

These emotions are an obstacle to skeptical inquiry of the sort that science welcomes, at least in principle. Skeptics face an unappetizing choice: burned at the stake, or fleeing for one's life one step ahead of an incensed mob.

I am predisposed to skepticism on two counts. Majoring in Philosophy at university taught me to examine the assumptions underlying any claim about the nature of reality, and my experience as a builder taught me to brush aside vague assurances and ask: yes, but *exactly how does this work*? Under what conditions does it fail? What are the consequences of its failure? Generalities are not substitutes for the mechanisms of cause and effect we need to understand a system well enough to repair it.

Given the example of the emotions generated when Progress is questioned (I capitalize *Progress* to identify it as *Technology-Driven Progress*), it will come as no surprise that my observations fall straight into the heresy bucket.

My observation is that Progress is viewed as a *Force of Nature*, an unstoppable expansion driven by inherently positive technology. Progress is limitless because ingenuity, growth and technology are limitless.

We come now to the *burned at the stake or flee for your life* moment, for it turns out that Progress isn't a *Force of Nature*; it is a modern *mythology*, a radically simplified story of how the world works that doesn't actually map the real world.

We may think that mythologies are templates like the *Hero-Heroine's Journey* or supernatural tales of gods, but as we'll see in Chapter Four, mythologies are fundamentally *stories—narratives* in today's lexicon—that explain the world in simple, emotionally appealing ways. Progress is the penultimate mythology of the modern era.

Though we see mythology as the dusty remnants of a bygone era of ignorance, we've created a secular mythology that we don't even recognize, a *Progress* mythology of beliefs that are not science, though we cloak them in the raiment of science.

We haven't abandoned mythology, we've simply created a modern mythology of eternal growth and technological advance.

In effect, *Technology-Driven Progress* fills the vacuum left by older mythologies with a rapturous story of limitless growth driven by wondrous technologies

This mythology of eternal growth and the inherent goodness of technology arose in a specific era, the 19th century, in a particular socio-economic setting, and it served us well as the foundation of global industrialization. But now that the footprint of our technology is global, this *mythology of Progress* has not just ceased to serve us well, it has disrupted natural systems we depend on but do not fully understand.

Once we tease Progress apart, we find that in many cases that what's presented as an advance is actually *Anti-Progress*, the opposite of actual progress. As a result, this modern mythology has failed us on both the human and planetary scale.

This is the *Paradox of Progress*: now that we've reached so many milestones of Progress—technological wonders and material abundance-- we find the opposite of what we expected: *Anti-Progress*.

Why does this story of limitless growth generate *Anti-Progress* rather than actual progress? Four dynamics drive the paradox: 1) we seek to maximize gains today by shifting costs and consequences to the planet's biosphere (humanity's *Commons*) or the future: for example, highly processed foods (HPFs) generate profits today, while the diseases generated by consuming HPFs manifest years or decades later; 2) The optimal profit-maximizing organization is a monopoly or cartel which eliminates competition and transparency, leaving no alternative to *Anti-Progress*; 3) growth is presented as the solution to all problems even as it expands *Anti-Progress*, and 4) To optimize private gains, profitable *Anti-Progress* is presented as *Progress*.

This disconnect between the Progress mythology's story and the real world cripples our ability to make informed decisions, as it opens an unbridgeable gap between what we experience—*Anti-Progress*--and what we're told is both magical and real: Progress.

Highly Processed Foods are *Progress* until 74% of adult Americans are overweight or obese and at risk of metabolic disorders.

As global plastic production rose from 2 million tons a year to 450 million tons annually today, *plastic is Progress* until there's a floating mass of waste plastic in the Pacific Ocean the size of Texas: *the Great Pacific Garbage Gyre*, a topic we'll address later.

Under what bewitchment do we declare *the Great Pacific Garbage Gyre* Progress?

Our defensive response when presented with *Anti-Progress* reflects our profound attachment to the enchantments of the *Progress* mythology. Perhaps we fear what might happen should Progress be revealed as a *belief structure* rather than the unbreakable arc of history, for what is the foundation of our hope and confidence in a better future without the unstoppable advance of technological Progress?

As Koohan Paik-Mander noted, to say that Progress is a mythology is tantamount to saying the gods of technology are dead. And so bristling with indignation, we respond with rationalizations for the

collateral damage of Progress and denounce anyone questioning our faith that technology will solve every problem if we just unleash our ingenuity and give it our all: a new Steve Jobs will emerge to solve every manifestation of *Anti-Progress* with a new technology—just wait and see!

The over-reaction of the technologist audience to Mander's critique reflects a profound insecurity about both the immutability of Progress and their role as beneficiaries of Progress; those secure in their faith would have brushed aside the criticism.

This unease has another source. Every civilization is a dynamic mix of 1) imaginary constructs of beliefs and values; 2) socio-economic systems and institutions, and 3) technology. Like all of life, human civilization must adapt to changing conditions or face extinction. Humans adapt by learning. Change can occur in any of the three realms, or none of the three. If the civilization is incapable of learning and adapting, it will be swept into the dustbin of history.

The mythology of Progress implicitly promises us that the unstoppable advance of technology will provide all the learning and adaption our civilization needs to thrive. Our belief structure—our mythology of Progress—and our institutions do not need to change.

But this reliance on technology has troubling consequences. Our belief structures and systems have remained unchanged and are now maladaptive. Technology is generating *Anti-Progress*, consequences that are beyond our understanding or control.

Technological change isn't enough. Our beliefs and values, encapsulated in the mythology of Progress, also have to adapt, as do our systems and institutions. Our civilization has to learn and adapt in all three realms to thrive, not just in the narrow mechanical world of technology. For technology lacks the moral compass and wisdom all civilizations need to avoid foundering on greed and hubris. Our technological hubris has raised Nemesis, *Anti-Progress*.

We're blind to the resulting narrowness of our imagination. We think only of technological solutions, and when these don't actually address the problem, we think only of adding more technology: the solution is always a new technique, app or gadget.

That these may be fanciful or impractical is ignored, for the mythology holds that there are no limits on technology if we just go full speed ahead.

Faced with *Anti-Progress*, we respond by clinging even tighter to an imaginary belief construct that we claim is fact: technology can fix everything.

There is something deeply human in our childlike desire to believe in something that guarantees a better future, and this renders us vulnerable to self-serving manipulation.

Those benefiting from this mythology promote it as Progress even as it delivers the opposite of progress because *Anti-Progress* is extremely profitable, a dynamic we'll discuss in *The Carrot and the Snack*.

The problem is that our mythology of Progress disconnects our pursuit of limitless growth from the consequences of our pursuit. Progress generates *Anti-Progress* because the mythology only has eyes for benefits in the present and ignores future consequences.

Just as we're blind to the narrowness of our imagination, we're blind to our own blindness: that we think an imaginary belief structure is fact is not just extraordinary, it's extraordinarily maladaptive.

Placing our faith in a story about how the world works that ignores consequences is an extraordinarily poor evolutionary strategy, for the real world does not respond to stories, it responds to our actions.

The exponential expansion of *Anti-Progress* is evidence that the story of limitless technological Progress is an evolutionary dead end. Rather than accept that our story is maladaptive, we double-down on our childlike faith in the god-like powers of technology, a recipe for accelerating *Anti-Progress* to the point of evolutionary failure.

Anti-Progress hurts our pride, for we consider it self-evident that Progress is limitless and so we have no need for mythology. Or so we imagine.

But the need for the simplicity and clarity of mythological narratives remains embedded within us, and we would be wise to recognize the need for a new mythology of progress. We cannot dispense with mythology, but we can substitute a new mythology better suited to the realities of the 21st century.

The goal of this book is to outline a new mythology of progress that advances human well-being and global sustainability by reconnecting our actions to their consequences. Rather than cling to the belief that growth and technology will magically solve all our problems, we will be better served by advancing well-being without regard for growth or technology; in many cases, consuming less will advance well-being—*true progress*—far more effectively than obsessively seeking to consume more.

To save the world, we need a mythology that redefines progress to drive learning and adaptation beyond the narrow realm of technology. Without a substitute mythology, we will cling to our 19th century mythology of limitless consumption even as it pulls us over the event horizon into the black hole of *Anti-Progress* oblivion.

Chapter One: What Is Progress?

What Is Progress?

What is Progress? It's so obvious we rarely bother even defining it as advances in health, safety, comfort, convenience, cost, novelty, abundance, public access, engagement and luxury, i.e. signifiers of status. We can summarize these ten attributes as *human well-being*.

If asked for examples of Progress, we start with increases in lifespans and literacy, and declines in infant mortality, infectious diseases and hunger. In the developed world, we might offer up air travel: we've progressed from rickety biplanes to the first metal mono-wing passenger aircraft to fast, reliable jet-powered airliners. Or consider telephones: from clunky desk phones to sleek smartphones. In healthcare, we're advancing treatments of complex diseases such as cancer.

If we look at history, progress has been measured primarily in material security available to the masses: public water supplies, food security (subsidized storage of grain, etc.), infrastructure such as roads and ports, and security (defensible borders and public safety).

These advances of security and health are earmarks of civilization, and the primary obstacle to such advances is the substantial cost of building and maintaining these systems. The key characteristic of public progress is everyone benefits from potable water, food security, etc.: they serve the *common good*.

The reliability and availability of these benefits is the difference between developed and developing economies. Tap water, for example, remains undrinkable throughout much of the world, as public health infrastructure remain inadequate or unreliable.

Affordable access for all is the key metric of progress. If these essentials are only affordable to elites, this doesn't qualify as progress. If the ruler's palace holds the entire nation's handful of luxuries and everyone else is living in mud huts, we wouldn't call that progress. We would say that is a backward place in desperate need of real progress.

As a general rule, improvements only become affordable when they have been industrialized, i.e. *commoditized* by processes that increase production while reducing costs.

In the heyday of industrialization—the 19th and first part of the 20th centuries—advances in public works were celebrated as shining beacons of progress: improved healthcare, more affordable food, rural electrification, national railways and telephone lines were rightly viewed as tremendous accomplishments that materially improved the health, safety and security of millions of people.

While humans have welcomed progress for millennia, the current idea of Progress took its current form in the 19th century as industrialization fueled by large-scale extraction of hydrocarbons launched one astounding technical advance after another.

When we think of the world in the 1790s--agrarian, powered by windmills, sails, wood, draft animals and human labor, cities choked with smoke and disease, transport slow and miserable—we find a world not very different from Leonardo DaVinci's Italy of 1500 or the sprawling agrarian Ming Dynasty in 1500 China, or indeed, from the Roman Empire circa 100 A.D.

When we compare the world of 1799 to the world of 1899, it's not at all surprising that the modern idea of *technologically driven Progress* came to dominate the world.

But Progress takes many forms, and so we need a *taxonomy of Progress* that separates the various types, just as we have a taxonomy of species and subspecies.

Pre-Industrial Progress: The Pont Neuf Bridge

A pre-Industrial Revolution example of how one engineering project can advance Progress is the Pont Neuf bridge across the Seine river in Paris, France, which was started in 1578 and completed in

1607. Unlike previous bridges, Pont Neuf was built of stone and wide enough for two-way traffic of carts and carriages as well as walkways for pedestrians.

We're accustomed to considering modern bridges as engineering marvels—the Brooklyn Bridge and the Golden Gate Bridge come to mind--but this first two-way traffic bridge was more than an engineering feat: it transformed life in Paris in many ways.

Since it allowed the two-way flow of vehicles and pedestrians, it reduced congestion and accidents, and increased the flow of goods and people across the river, advancing commerce, safety, convenience and lowering the cost of transport.

Since it also enabled more pedestrian traffic, it provided an open-to-all opportunity to move freely across the river and engage other people of different classes: to see and be seen. In this way, the bridge advanced public access, *engagement*—you might meet a friend crossing the bridge—as well as novelty—who knows what you might see on the busy bridge—and opportunities to display status signifiers. There was no better place to show off the family's new carriage than to cross Pont Neuf, where everyone would see your glorious embodiment of wealth.

Pont Neuf is a good example of the public and private aspects of Progress. The bridge was a durable public infrastructure that served *the common good* as everyone benefited from this improvement: the working class benefited from the bridge along with the merchant class.

We can describe this as *utilization of the public commons*: just as the river is part of the public commons, the bridge is an infrastructure that becomes part of the public commons.

Put another way, the bridge is in effect a *public utility*: it's available to all at the same price (in this case, free).

The value of the bridge cannot be reduced to the value measured by *the market*, for example, the reduction in the cost of transport; the bridge also created *non-market value* in the common good, benefits that cannot be priced like goods and services. There is no way to calculate the social and financial advances derived from the investment in the bridge, for much of its value exists outside the marketplace. The bridge still delights us 400 years later, providing us with novelty, convenience, engagement and the ineffable value of a landmark.

Just as important as its universal benefit was its absence of downside: no neighborhoods were razed, and no group of citizens was sacrificed to build it. These are the essential characteristics of Progress: it must 1) serve the public interest / common good and be available to all; 2) doesn't sacrifice the many to benefit the few and 3) the downsides—the negative consequences—must be far outweighed by the benefits reaped by all.

This form of Progress—that serves the common good, becomes part of the public commons, is available to all at the same price and whose self-evident benefits aren't offset by negative consequences—is the common conception of Progress: unalloyed upside untainted with downside.

If we look at historical examples of this kind of Progress, we find they are typically public works—bridges, canals, roadways, railroads, water treatment plants, subway systems, public health initiatives

and the like. In many cases, the government (what we call *the state*) pays for the infrastructure. In other cases, the state smooths the way for private capital to build the infrastructure, for example, granting land to the companies building railroads. But even in the cases where private capital funded part or all of the infrastructure, this *utilization of the public commons* becomes a public utility, even if it is owned by private interests.

These large-scale public improvements typically utilize the public commons of land, airspace and waterways, and are often funded by taxpayers.

So let's start our taxonomy of Progress by listing the characteristics of public works such as the Pont Neuf bridge:

--Available to all at the same price: a public utility.

--Utilizes the shared commons for the common good.

--Highly durable, low maintenance costs.

--Benefits human well-being in many ways, both public and private.

--Near-zero downsides / negative consequences.

When Progress is challenged, we bristle because we think first of the unalloyed common good accomplished by these public improvements.

But as we shall see, everything labeled Progress doesn't meet these same standards.

Societies continue to add such infrastructure, but the notion that these projects are the epitome of *Progress* is deeply rooted in the 19th century. The concept of Progress underwent a transformation starting in the early 20th century, a transformation that continues to the present.

From Public Good to Private Good

In the heyday of *public progress*, the technical achievements that were considered marvels were enduring public works: bridges, rail lines and so on.

Today, residents of the developed world no longer marvel at public works such as a new water treatment plant. These advances of the *common good* are taken for granted.

Once the marvels of clean water, electrification, telephony and public transportation are in place, what's left to further Progress?

The answer arose in the early 20th century: Progress was now exemplified by goods and services purchased by individual consumers for their *private good*. Households acquired new appliances and a new mode of transport, the automobile, for their private use and enjoyment.

The definition of Progress shifted from durable public works serving the common good to heavily marketed consumer products serving individual's *private good*.

Production began shifting from *durables*—railways, subways, bridges, telephones that lasted for decades, industrial-scale systems designed to last—to *replaceables*, consumer goods that wore out or were obsoleted by changing fashions, or that were purposefully engineered to be replaced at shorter intervals (*planned obsolescence)*.

These privately purchased icons of Progress advanced many of the attributes listed previously: health, safety, comfort, convenience, cost, novelty, abundance, public access, engagement and luxury (signifiers of status). While public health measures were obviously Progress, appliances and autos also offered comfort, convenience, novelty and served as signifiers of status—an important benefit for social beings seeking to improve their ranking in the social hierarchy.

What defined consumerist private Progress was *modernity*, for what was most *modern* was by definition the most desirable.

As social critic Christopher Lasch observed, this modern version of Progress is based on the insatiability of human desires—what we might summarize as *consumerism*: there is always something more to want, and so consumption (and therefore private Progress) was limitless.

This shift from *public Progress* serving the *common good* to *private Progress* serving *private good* changed society and the economy in complex ways. The best way to illuminate these changes is to compare *public works Progress* with *consumerist private Progress*.

Let's start with the limited options offered by *public works and utilities*: there is only one kind of water and electrical service, trains have only two options (first class, second class), subways, buses, and other public transport generally have one level of service. Until the advent of mobile telephony, telephone service was limited to one level of service and one kind of phone. (In the 1960s, the one-piece Ericofon was available in some U.S. markets. That was the only option available.) Everyone using a public road or waterway has to follow the same rules and pay the same user fees.

These services were maintained by the utilities. The customer's role was passive: you paid for the service and if there was a problem, the utility took care of it.

In the consumerist version of Progress, the consumer is required to choose from an array of options. Since consumerism is based on the insatiability of desire, the consumer also has to decide which desires will be fulfilled now and which ones will have to wait.

These choices open the door to *marketing*, which seeks to persuade consumers to select one product over all the other options. There was no need to market water or electrical service, as there were no options to choose from.

This shift from Progress being defined by advances in the common good to satiating consumer desires brought with it a set of incentives that fueled new structures of production and finance—for example, the introduction of consumer credit, so consumers could buy more goods now and pay for them out of future income.

To increase sales and profits, production shifted from *permanence and durability* to market-driven *impermanence, obsolescence and replaceability*.

In the initial rollout of new consumer goods, manufacturers became profitable by virtue of their products being durable and affordable, for example, Ford's Model T automobile. Once production had satiated the demand of first-time buyers, however, profitability increased not by virtue of durability but by virtue of being the newest (and therefore the most desirable) and by offering *extras* that cost more, with the extras being the source of higher profits.

But there was a limit on the profit potential of modernity and fashion. Consumers could ignore the appeal of the latest gadgetry and keep using their old product. The solution to this limit on profitability was to engineer products to have limited lifespans so consumers would be forced to replace them, and make them difficult or impossible for nonprofessionals to repair: *planned obsolescence*.

Today, *impermanence, obsolescence and replaceability* are the core mechanisms of maintaining profits. Accelerating *product cycles* and *planned obsolescence* are the reliable drivers of profits by forcing consumers to replace products every few years: *product-cycle obsolescence* guarantees the old product no longer works with the latest software, and *planned obsolescence* intentionally uses low-quality components and makes repairs difficult by soldering in batteries, etc.

Consumerism is the process of tempting the upper class with luxuries unaffordable to the masses and tempting the masses with affordable luxuries of disposable quality or limited-duration utility (*we no longer support this device*).

This model insures demand can never be quenched, and so sales and profits are reliable.

Progress became entwined with *profit*: Progress was profitable, and goods and services became profitable by being marketed as Progress.

Lasch also made this observation: "The model of ownership, in a society built round mass consumption, is addiction." A reliable way to insure mass consumption and steady profits is to addict consumers or make them dependent on your service. This is reflected in the engineering of snacks, social media, etc. to be addictive by hijacking the innate stimulus-response pleasure centers of our minds that reward us with *dopamine hits*.

Another reliable source of profits is to establish a monopoly or cartel so consumers have few if any alternatives. Once an essential product or service is under the control of a monopoly, the consumer has no control over the price, what products and services are offered, or the quality of what's offered, for there are no competing options available.

As noted previously, large-scale improvements in the public good have relatively few downsides. Improving the material security of millions of people far outweighs the relatively modest tradeoffs and costs. The permanence and durability of the improvements lend themselves to efficient use of resources and thus sustainability.

Fueling insatiable desires for status and novelty with disposable products generates the opposite dynamic: the gains are ephemeral while the negative consequences pile ever higher in the biosphere, society and the lives of individual consumers.

Rather than invest in public works and utilities that are durable and efficient, consumerism incentivizes the tremendous waste generated by *product cycle* / *planned obsolescence*, as all the obsolete products end up in the landfill and all the resources consumed in their manufacture are also wasted, as what could have been utilized to make durable, efficient products is squandered on products designed to be tossed in the landfill every few years.

Desires may be limitless, but resources are not. The decision on how to invest the surplus wealth of our civilization and the planet's resources comes with *opportunity costs*: what else could have been done with our surplus wealth and resources?

In the terminology of economics, the *opportunity cost* of market-driven *obsolescence* is very high, as all the money, resources and labor that went into making and marketing a product destined for the landfill could have been invested in a durable product that could have served the buyer for many more years or even decades.

Consumerism generates what I call the *Waste Is Growth Landfill Economy*, where the greater the waste, the higher the growth and profits. The Landfill Economy doesn't just burden the individual consumers forced to replace products; it also has *social costs*, as the waste drains the entire economy and degrades the biosphere.

Simply put, the consumerist model of *Waste Is Growth* diminishes the common good.

Let's go back to comparing public Progress and the private Progress of consumerism. In the heyday of public works that advanced the well-being of everyone—everyone gets the same low-cost tetanus shot, for example—no one thought it would be a much wiser and more productive use of all the money and resources invested in public infrastructure and health to make consumer products that were soon junked.

Yet that is precisely what we've chosen by elevating insatiable desires for *replaceables* as the primary driver of growth in consumption, which has become the measure of Progress.

This version of Progress is incapable of advancing public or private progress in any sustainable way. Simply put, the consumerist version of Progress is not progress: profitable, yes; progress, no, for the consequences are *Anti-Progress*, the opposite of actual progress.

As we shall see in later sections, Anti-Progress is the inevitable result of the market's irresistible bias in favor of optimizing short-term profits by offloading long-term costs and consequences on the *Commons*, the public and the future.

In the marketplace, there is every incentive to mask the full costs of production and the long-term negative consequences of consuming the products and none for recognizing the full costs and consequences. As a result, marketing stresses the joys of indulgence in the moment, as this is what optimizes profits. We'll explore this later in the section *The Carrot and the Snack*.

As McKenzie Wark, Bruce Schneier, Shoshana Zuboff and others have noted, the profitability of the digital realm is uniquely pernicious in its dependence on the *Anti-Progress* of addictive media, parasitic data harvesting (a.k.a. *surveillance capitalism*) and the optimization of attention (a.k.a. *engagement*)

via sensationalism, conflicts, hyper-emotional stimuli and other methods that hijack our innate attraction to novelty and emotional content.

Fueling desires for status, luxuries and novelty is not a new trait. It manifests in every civilization which produces a surplus of resources that enable consumers to pursue their desires for higher social status.

In ancient civilizations, the surpluses were limited to elites. The late Roman Empire offers many examples of excess elite consumption, perhaps none more telling than the enormously costly consumption of incense woods from the Arabian peninsula by elites and the aspirational wealthy. Burning spectacular quantities of incense woods were overt displays of *conspicuous consumption*.

Those selling the incense to Roman traders demanded scarce gold and silver in payment. In effect, the Roman elites literally burned the accumulated wealth of the empire to temporarily enhance their status. We are following the same path with our immensely profitable consumerist *Waste Is Growth Landfill Economy*.

Let's define this consumerist version of Progress that is actually *Anti-Progress*:

--Impermanent by design to force replacement.

--Intentionally addictive / makes the consumer dependent.

--Limiting competition as the means to enforce high prices and planned obsolescence.

--Heavily marketed.

--Equates Progress with continually expanding consumption and profit.

--High opportunity costs due to the *Waste Is Growth* model.

--Negative consequences far outweigh benefits over time.

The Role of Social Technology in Progress

We tend to associate Progress solely with advances in science and technology, to the exclusion of other factors that are just as essential as scientific leaps.

This leads us to believe that scientific discovery will inevitably generate new technologies that will naturally spread throughout the economy and populace. This is a claim that both technology and human history are *teleological*: there is a trajectory of science and civilizational development that despite occasional setbacks always advances us on the path of Progress, a path with no endpoint, for Progress is eternal.

China offers a historical counter-example. Scholars have long debated why China's vast wealth of premodern scientific and technological advances did not transform its society. The basic answer is that Progress isn't simply the development of novel technologies; there must be systems of *social*

technology that enable the new technology to be developed into products which can be *commoditized*, i.e. produced on a mass scale so they become affordable to the majority of the populace.

Essayist Samo Burja defines *social technology* as "the ability to organize human relationships, actions, and groups in organized and effective ways, which is itself a specialized form of knowledge."

To understand *social technology*, it's helpful to consider the highly developed empires of the ancient world, from the Bronze Age Mediterranean world and early dynasties in China to the Roman Empire, the Tang Dynasty and similarly sophisticated civilizations in India, Africa, Southeast Asia, and in the Americas.

These empires had rudimentary technologies such as mining and metalworking, writing, systems to track taxation and commerce, sailing ships, carts, basic weaponry, tools for stone masonry, weaving, brewing and wine-making, cranes and pottery. There is nothing intrinsic to these labor-intensive technologies that insures the development of sprawling empires that managed far-flung activities with slow, unreliable communications and transport.

The existence of these technologies did not make the Egyptian, Greek or Chinese accomplishments inevitable; all these tools and techniques were also in use in much less advanced societies. The difference is the level of social technology—the organization of knowledge, skills and resources--that had been developed.

If we consider, for example, the immensely complicated gearing of the Antikythera Mechanism fabricated in ancient Greece, it is less the result of some new technology being discovered than the refinement of tools that already existed.

The great pyramids of ancient Egypt were not the result of some new scientific discover; they were the result of advanced forms of social technology that organized the surpluses of the Egyptian economy to assemble the materials, labor and expertise needed to build large structures with very basic technologies.

Once those organizational and record-keeping social technologies were lost, it seemed impossible that ancient peoples could have accomplished so much with such primitive technologies. Indeed, it is impossible to construct great buildings, miles of aqueducts and hundreds of kilometers of roads, some of which are still functional two thousand years later, without highly organized social technologies.

In his book *1587, A Year of No Significance: The Ming Dynasty in Decline*, author Ray Huang took pains to describe how the limits of the Ming Dynasty's social technological systems made it impossible to manage commerce and credit on the scale needed to advance China's economy. Lacking the systems to manage commerce with the outside world, the dynasty suppressed coastal trade as a threat.

Once the limits of existing social technology have been reached, decline and collapse are the result. Huang's summarized the consequence of suppressing social technologies in favor of maintaining a known but sclerotic order: *"The year 1587 may seem to be insignificant; nevertheless, it is evident by that time the limit for the Ming dynasty had already been reached. It no longer mattered whether the ruler was conscientious or irresponsible, whether his chief counselor was enterprising or conformist,*

whether the generals were resourceful or incompetent, whether the civil officials were honest or corrupt, or whether the leading thinkers were radicals or conservatives--in the end they all failed to reach fulfillment."

In other words, if the social technological systems either do not exist or have decayed, even great leaders and new technologies cannot reverse decline.

When we consider public manifestations of Progress such as the Pont Neuf bridge, we realize the actual technologies in shaping and transporting the stonework and assembling the bridge were not much different from the technologies used by ancient builders. What made the bridge possible was not new technologies but the French monarchy's social technologies that collected taxes to fund the bridge, held the managers accountable for its progress, and so on.

Without the systems in place to enable commerce, the construction of carts and carriages, maintaining order of traffic and all the other elements we tend to take for granted in the modern era, the bridge would not have reached its transformative potential.

The same is of course true for the consumerist manifestations of Progress. Without transport systems, supply chains, bank credit, the archiving of records, enforcement of rights of ownership and patents, and many other forms of social technology, the ideas and goals of Thomas Edison and Henry Ford would have remained unfulfilled.

There are more ephemeral but equally important aspects of social technology: to engage in long-distance trade in commoditized goods and services, each participant must have some assurance that what was paid for will be delivered. Broadly speaking, this is *social trust*. There are cultural dynamics in trust, of course—is the society a *high-trust* or *low-trust* social order? —but there are also mechanisms to ensure trust such as transparency, accountability, contracts, insurance and legal recourse should the system fail.

In the inspirational narrative of *Technologically Driven Progress*, Progress is advanced by ingenious people making scientific discoveries which lead to the invention of new technologies. This narrative elevates the scientist or inventor—generally presented as working alone or in a small group-- as the hero / heroine of Progress.

This doesn't map the real world, where existing social technologies must be present for the new invention to enter the economy as Progress. Many ingenious people in China invented many brilliant advances that remained curiosities buried in dusty archives.

Consider the work of Joseph Needham and Lu Gwei-djen, who exhaustively documented premodern China's staggering spectrum of technological advances, advances that by themselves did not generate widespread prosperity. The reason these inventions did not spark an industrial revolution is China lacked both the necessary social technological systems and the political-cultural values needed to assemble these systems over time.

The Industrial Revolution found fertile ground in Great Britain not only because the educational and cultural structures enabled smart people to invent new devices, but because Great Britain had slowly assembled interconnected systems of institutional trust, finance, markets, transport (canals,

shipping), state protections of property rights (patents), journals for sharing knowledge, engineering, a culture of discovery, risk-taking and entrepreneurship, use of force to protect national hegemony, and a labor force that could be moved from rural land tenure to urban factories.

The least visible but highest-value social technology was the institutional means to create a new social technology from scratch as needed, built on existing social structures.

The lack of any of these complex systems would have inhibited or even capped the Industrial Revolution's expansion.

That the United States, modeled on Great Britain institutionally and culturally, should follow in rapidly industrializing is understandable, as is the uneven progress of nations that lacked the necessary institutional and cultural forms of social technology.

Like the fish in the sea who don't see the water they swim in, we are largely unaware of how many social technological systems must work together to enable technological Progress. We only become aware of these systems when we enter a society which lacks these social technologies and discover it's almost impossible to get anything done on the scale we take for granted.

As the example of China's lost opportunities shows, the advancement of social technologies is no more teleological than Progress: social technology can remain undeveloped or become unresponsive for many reasons, and this decay reverses Progress no matter how many novel discoveries are made.

In our pursuit of an objective assessment of Progress, we must add a line to each taxonomy entry that reflects the systems of institutional social technology that enabled the French monarchy to build the Pont Neuf bridge and American companies to manufacture, distribute and market consumer goods across the nation. Without such a system, scientific innovations are marooned on a desert island.

The Downsides of Progress: Tradeoffs, Costs and Consequences

We've considered two species of Progress, one at each end of the taxonomy. The first is the ideal touted as emblematic of all Progress—beneficial and available to all, durable, serving both the common good and private good, with few if any tradeoffs or negative consequences.

The second species touts itself as Progress, but it lacks the characteristics of unalloyed Progress and embodies many characteristics of *Anti-Progress*: it offers a veneer of Progress that masks its agenda of maximizing profit by marketing designed-obsolescence products to consumers under the guise of Progress.

In between these two species is a taxonomy of Progress in which the benefits often come with burdensome tradeoffs, high costs and profoundly negative consequences. These costs are often *externalized*, meaning they are not included in the initial sticker price and often manifest over time, while the consequences are often *internalized*, meaning that they are intrinsic to the technology and cannot be separated from the purported benefits.

These tradeoffs, costs and consequences are unevenly distributed to the public and the planet's *biosphere*, our *global commons* of air, seas, waterways, lands and all the other forms of life that share the planet with us.

Progress now has a planetary footprint, and so narrowly focusing on the sticker price and purported benefits of new technologies ignores the consequences that are disrupting planetary systems we do not fully understand or control.

All these forms of Progress share two assumptions: 1) *Progress is always profitable*, and the issue is how to maximize private profit, and 2) if *Technological Progress* generates a problem, the solution is always a new technology.

We can organize this taxonomy according to these characteristics: at the top, Progress with little negative impact (the tradeoffs, costs and consequences are outweighed by the benefits) to balanced impacts (the tradeoffs, costs and consequences offset the benefits) to *Anti-Progress* (the tradeoffs, costs and consequences far outweigh the purported benefits).

These characteristics are also organized by time and intensity: whether the costs and consequences are short-term or long-term, and if by accumulation these increase with time such that they reach a *tipping point* into crisis that escapes human control.

We can assess each form of Progress with these measures:

--Tradeoffs: what must be sacrificed, endangered or lost by unleashing a new technology on the world.

--Costs: both the direct, costs of production and distribution, and the not-easy-to-calculate *externalized* and *internalized* costs that manifest later, long after the technology has become ubiquitous.

--Consequences: the immediate downsides and those not anticipated in the initial excitement that are difficult to measure and prone to being dismissed even as the negative impacts pile up.

-- *Technological Progress* and *Social Progress*: this is organized from one end of the spectrum (Progress is solely technological, with limited social impacts) to the other end (Technological Progress enables vast social changes to unfold in ways that were not possible prior to the spread of the technology).

There are of course many opportunities for judgment calls in this taxonomy. For example, while Gutenberg's printing press is widely considered a tremendously positive form of Progress, some within the hierarchy of the Roman Catholic Church at the time viewed it as a danger to the dominance of the Christian faith as they understood it.

This highlights the necessity of separating claims of harm made by specific groups benefiting from the status quo that is about to be disrupted by Progress—claims based on self-interest not on the overall costs and benefits of Progress--and a more objective assessment which attempts to measure the benefits, tradeoffs, costs and consequences of each form of Progress.

The purpose of this taxonomy is to differentiate the unalloyed positive species of Progress from those complicated by tradeoffs and consequences, and from those whose eventual costs and consequences far outweigh their benefits. These forms meet the standards of *Anti-Progress*: their claim of Progress is negated by the immense weight of their tradeoffs, costs and consequences.